

Between Fear and Fascination: An empirical Study on Risk Perception concerning Global Warming

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Abstract

In connection with the human-induced greenhouse effect our climate is changing and the frequency of extreme events such as storms, heavy rainfalls or periods of droughts are increasing. The topic of global climate change, including all its negative effects, is becoming noticed more and more by the general public. Irrespective of whether it is generated in an academic, a media or a personal context, the multifarious information about risks from natural disasters significantly influences the risk perception and potential environmental fears of people. The study combines results of scientific research on natural disasters with the subjective individual perception of environmental risks.

For different aspects of global change, teaching concepts and materials are developed and published in the form of a “Natural Disaster Kit”. In this manner scientific competencies can be established and potential environmental fears can be attuned to actual conditions. The main focus of the study is concerning how far knowledge can be increased and attitudes changed by working with the “Natural Disaster Kit”. For this purpose a questionnaire in the framework of a pretest-posttest-design has been developed. A pilot test has already been completed with 120 students and first empirical results will be presented.

Key words: Natural disasters, climate change, risk perception, secondary school students

Risk perception and climate change

Climate and weather belong to the oldest, most common and popular topics humans talk about. With the increasing awareness regarding climate change global warming is discussed by a broad public. Almost every week newspapers report on natural disasters in connection with a global climate change: Hurricanes in the USA (e.g. hurricane Kathrina), cyclones and floods in southwest and central Asia or winter storms in Europe (e.g. Kyrill or Lothar). The latest climate report of the European Environment Agency (EEA) points out that the temperature rise in Europe might be stronger as yet supposed.

The warming of the climate system is unequivocal, says the Intergovernmental Panel on Climate Change (IPCC 2006). Observations show increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level.

All of these topics are handled in a relatively serious manner by the media and are perceived by a broad public. The way people perceive that information is up to various factors such as prior experiences and social conditions. Different surveys show that climate change is one of our greatest environmental, social and economic threats (IPSOS 2006).

Material and Methods

Studies in the field of environmental educational research (Grasel 2000), socio-scientific climate research (Rayner and Malone 1998) and constructivist conceptual change (for example Schnotz 2001) do underline that subjective every day life theories do often differ from scientific theories. The basic considerations in the context of the conceptual change theory are that knowledge transfer in schools often meets more or less differentiated pre-concepts. In this case the newly learned topics do not replace the existing knowledge. The learners try to develop synthetic designs that combine both (Renkl 1996). Consequently, the research focuses on the analysis of the every day life theories before and after instruction (Schuler 2005). The project goes a step further in that it not only deals with the knowledge of the students but also their subjective risk perception.

Risks are perceived and evaluated individually and are influenced by socio-cultural and individual factors. In particular, secondary experiences in terms of different types of media such as newspapers or television play an important role. The risks attributes, for example publicity or likelihood, also affect the perception and appraisal of risks.

The study will focus on students of secondary I education (11-15 year olds). In order to detect a change in the knowledge as well as in the perception of different forms of environmental risks a pretest-posttest-design was chosen. The focus is on the question in how far scientific literacy as well as the understanding of ecological correlations can change the perception of risk. The treatment consists of specially developed learning concept with the focus on the topic of “natural disasters and global change”. In this context teaching materials in the form of a “Natural Disaster Kit” are made available to the teachers, consisting of different modules which can be combined in the lesson. For each of the thematic units in the kit (for example hurricanes) the teacher is provided with materials in different modules. The learning kit consists of four different modules that can be combined through education progress:

- teacher manual
- folder with background information and material for whole class instructions such as overhead transparencies
- multimedia platform with animations, film clips etc.
- introduction and materials for experiments

With a mixture of group work, the use of new media and experiments, the kit satisfies the new German national educational standards for Geography as well as standards in many other systems (e.g. the International Baccalaureate).

The different modules are connected into a coherent whole but can also be used individually. Within the project it is planned to create five natural disaster boxes and to evaluate these in cooperation with different school classes. After the successful evaluation the boxes can be duplicated as necessary and included into existing media centres which lend the materials to different schools. In this way, students can be better prepared to deal with natural disasters and more realistically assess the effects that disasters may have on their lives.

First results

First results were attained in the context of a pretest in 2008. With a questionnaire, 127 students were asked about their attitudes to and experiences with different natural disasters.

The questionnaire was divided into three parts. The first part dealt with natural disasters in general. In the second part the pupil had to answer questions regarding floods as an example of natural disasters. Finally, the third part consisted of questions regarding search for and their perceived authenticity (for example television, newspaper, internet blogs and so on.).

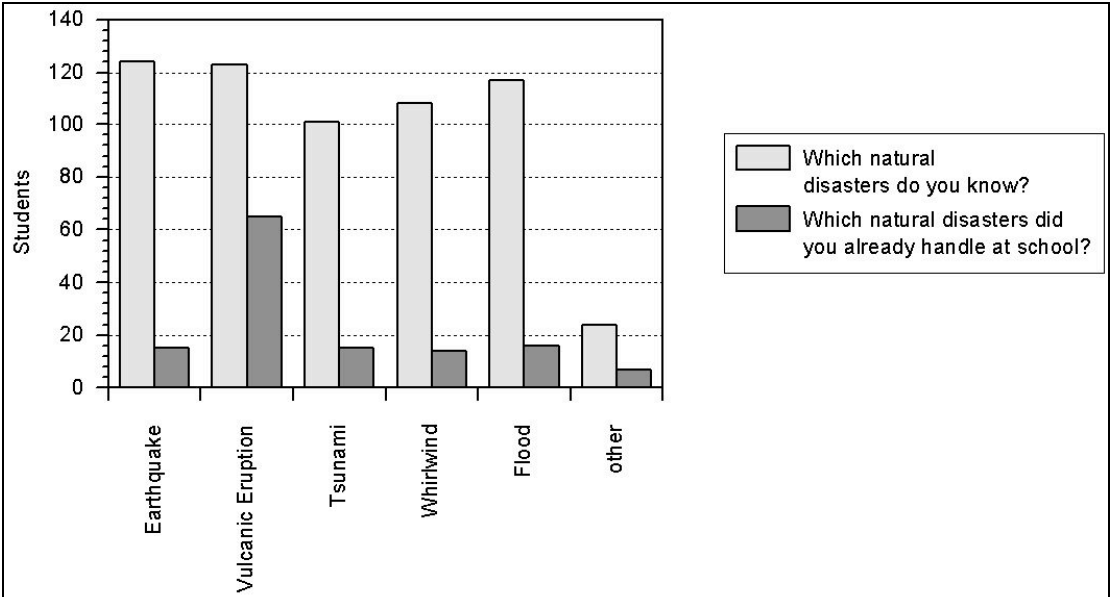


Figure 1: Students knowledge about natural disasters (own enquiry, 2008, n=127)

The analysis showed students were familiar with different types of natural disasters (Figure 1). About 80 per cent know natural disasters such as earthquakes, volcanoes or floods. However students rarely got their knowledge from education at school but rather mostly from secondary information in the form of media such as television.

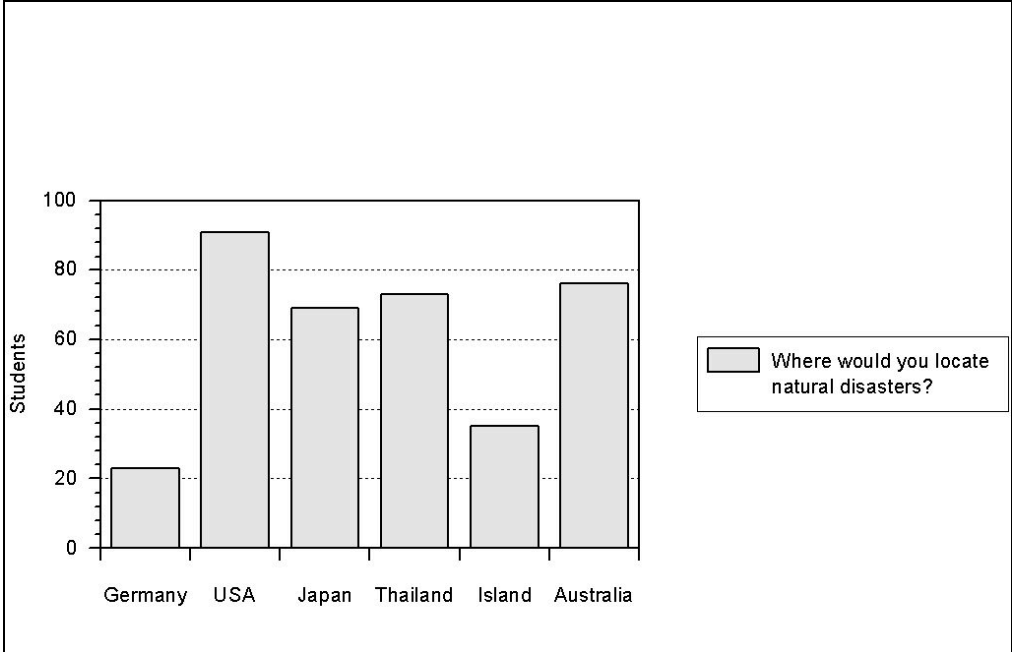


Figure 2: Geographical location of natural disasters (own enquiry, 2008, n=127)

Natural disasters are not perceived as real threats to the every day life of students. The possibility to be involved in a natural disaster is suppressed by them. A similar tendency is with regard to the question about which countries the students think are most affected by

natural disasters (Figure 2). The intention of this question was to find out if there are any geographical differences in the perception. Germany, the home country of the students, came last; only 20 per cent of the students think that natural disasters could happen here. The danger is seen as distant. A possible explanation could be the influences by the media (Figure 3). News as well as various TV-films and cinema movies deal with natural disasters but are usually not set in Germany (for example the movie “The Day after Tomorrow”). This is probably the reason why the USA finds itself in the first place with 74 per cent.

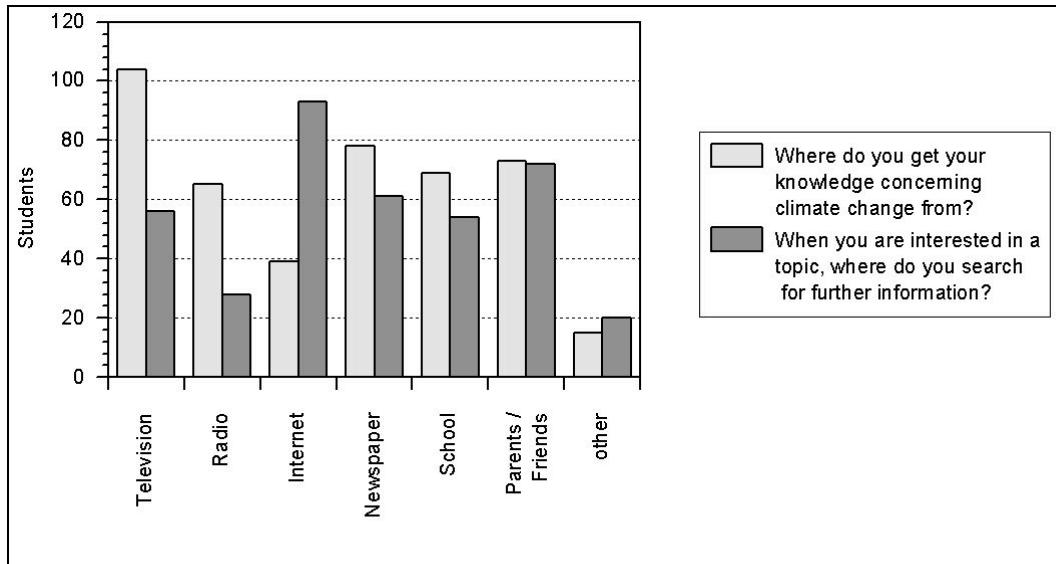


Figure 3: Natural disasters – role of the media (own enquiry, 2008, n=127)

In the survey, students were also asked about their emotions in connection to the term “Climate Change”. The emotion “fear” was in first place for 28 per cent of the students. Feelings of fear normally arise by reason of something unknown or incalculable such as an unknown situation. The implications and consequences of climate change are speculative, unclear and are often hyped by the media.

The second emotion ranked in connection with climate change was “indifference”. The two terms, “fear” and “indifference”, are cursorily seen contradictory. The students do not deal with the subject “climate change” and are not interested in this topic (Figure 4).

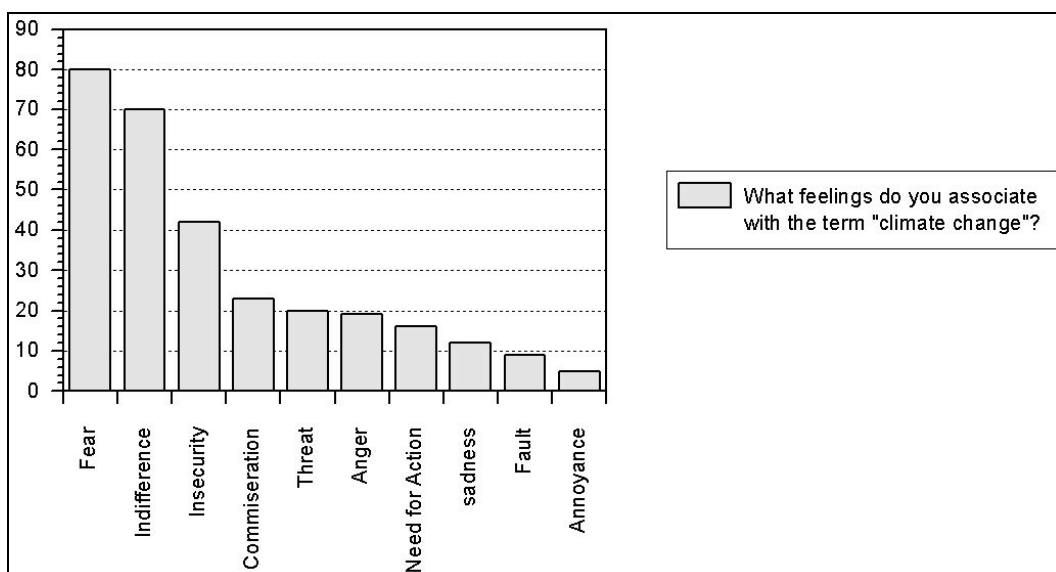


Figure 4: Feelings concerning climate change (own enquiry, 2008, n=127)

Both emotions signal a need to get more information on the topic “climate change and its consequences”. Within the project, a material and learning kit is developed to foster the scientific literacy and to attune potential environmental fears to actual conditions.

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